NRC FORM 618
(8-2000)
10 CFR 71

U.S. NUCLEAR REGULATORY COMMISSION

CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIAL PACKAGES

CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE		PAGES
9250	10	71-9250	USA/9250/B(U)F-85	1	OF	4

2. PREAMBLE

a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."

b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION

a. ISSUED TO *(Name and Address)*

BWX Technologies
Nuclear Products Division
P.O. Box 785
Lynchburg, VA 24505

b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION

BWX Technologies, Nuclear Products Division application dated June 13, 2005.

4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5.

Packaging

(1) Model No.: 5X22

(2) Description

A shipping container for unirradiated uranium of any enrichment. The outer packaging is a 16-gauge steel drum, approximately 22-1/2 inches in diameter and 34-3/4 inches high, with a heavy-duty clamp ring and forged lugs. The inner vessel (containment vessel) is a Schedule 40S stainless steel pipe with a welded bottom cap and a top weldneck flange. The inner vessel lid is a blind flange which is bolted to the weldneck flange with eight hex-head bolts. The closure includes double silicone O-ring seals and a leak-test port. The dimensions of the inner vessel are approximately 5 inches ID by 22 inches high. The inner vessel is centered within the outer drum by fiberboard and supported by plywood disks. The maximum weight of the package, including contents, is 300 pounds.

(3) Drawings

The packaging is constructed in accordance with BWX Technologies, Inc., Drawing Nos. 1220276 E, Rev. 4, and 1220277 E, Rev. 8.

5.(b) Contents

Type and form of material, maximum quantity of material per package, and Criticality Safety Index.

The weight of the contents, including secondary containers, inserts, and other materials in the inner vessel, shall not exceed 50 pounds.

(1) Unirradiated uranium as solid compounds or alloys which do not decompose at temperatures up to 250 °F, and uranium oxides as powder or pellets. The uranium may be of any enrichment. Carbide compounds are not authorized. The maximum H/U must consider all sources of moderation in the inner vessel.

Fissile Material	Maximum H/U	Maximum Fissile Mass per Package (kg)	Criticality Safety Index
U-235	3	9.0	2.0
U-235	3	1.6	0.5
U-235	20	4.0	2.0
U-233	20	0.5	1.8

(2) Unirradiated solid uranyl nitrate in the form of uranyl nitrate dihydrate crystals, which may have small amounts of uranyl trihydrate crystals interspersed. The uranyl nitrate crystals shall have a uranium content that is from 52.5 to 56.0 percent by weight. The uranyl nitrate shall be packaged in Teflon primary containers that will not melt at temperatures up to 94 °C. The uranium may be of any enrichment. The maximum H/U must consider all sources of moderation in the inner vessel.

Fissile Material	Maximum H/U	Maximum Fissile Mass per Package (kg)	Criticality Safety Index
U-235	3	9.0	2.0
U-235	3	1.6	0.5
U-235	20	4.0	2.0
U-233	20	0.5	1.8

5.(b) Contents (continued)

(3) Unirradiated uranium as solid metal. The uranium may be of any enrichment. The maximum H/U must consider all sources of moderation in the inner vessel.

Fissile Material	Maximum H/U	Maximum Fissile Mass per Package (kg)	Criticality Safety Index
U-235	3	9.0	2.5
U-235	3	1.6	0.5
U-235	20	4.0	2.0
U-233	20	0.5	1.8

(4) Unirradiated uranium as solid metal. The uranium may be of any enrichment. The packaging must include a solid aluminum disk insert positioned in the inner vessel, as shown on BWX Technologies, Inc., Drawing No. 1220277 E, Rev. 8 (Part No. 6). The maximum H/U must consider all sources of moderation in the inner vessel.

Fissile Material	Maximum H/U	Maximum Fissile Mass per Package (kg)	Criticality Safety Index
U-235	3	9.0	2.0

(5) Unirradiated liquid uranyl nitrate solution in sealed glass containers or screw top plastic vials, each within one or more additional plastic vials with taped lids, and within a sealed product can or polyethylene bottle containing a sufficient amount of vermiculite to absorb twice the liquid contents present. The uranium may be of any enrichment. The quantity of uranyl nitrate shall not exceed 1000 mL of solution.

Fissile Material	Maximum H/U	Maximum Fissile Mass per Package (kg)	Criticality Safety Index
U-235	N/A	0.4	0.4

6. The vent holes on the outer steel drum shall be capped or taped closed during transport and storage to preclude entry of rain water into the packaging.

7. In addition to the requirements of Subpart G of 10 CFR Part 71:

   (a) Each package shall be operated and prepared for shipment in accordance with Chapter 7 of the application, as supplemented.

   (b) Each package shall be acceptance tested and maintained in accordance with Chapter 8 of the application.

8. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.

9. Expiration date: March 31, 2008.

REFERENCES

BWX Technologies, Inc., application dated June 13, 2005.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

/RA/

Robert J. Lewis, Chief
Licensing Section
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Date: September 22, 2005

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION REPORT
Docket No. 71-9250
Model No. 5X22 Package
Certificate of Compliance No. 9250
Revision No. 10

SUMMARY

By application dated June 13, 2005, BWX Technologies (BWXT or the applicant) requested an amendment to Certificate of Compliance No. 9250, for the Model No. 5X22 package. BWXT requested to eliminate the use of washers for the 5X22 package. The applicant also made other revisions to the application to provide clarification. BWXT submitted a consolidated application for the package.

EVALUATION

By application dated June 13, 2005, BWXT requested an amendment to Certificate of Compliance No. 9250, for the Model No. 5X22 package. The applicant requested eliminating the use of washers for the inner vessel closure bolts. BWXT also provided revisions to the operating procedures and maintenance program in the Safety Analysis Report (SAR) for clarification.

Condition No. 3 of the certificate was revised to reflect the latest version of drawing no. 1220276, which eliminates washers. Washers are used to prevent the closure bolts from loosening. Additionally, washers also increase the contact area between the bolt head and the connecting surface to reduce the bearing stresses due to the bolt pre-load. As a result of this the elimination of washers is not desirable. However, the bearing stress under a standard hexagon bolt head due to the maximum 4000 lbs pre-load, is approximately 12,500 psi. This is below the 16,700 psi allowable stresses for membrane stresses. The inner vessel is well protected by the 55-gallon outer drum and the fiberboard disks. The applicant also stated, "[o]nce a container is torqued, the container is shipped within five days and is typically en route for a maximum of two days." Based on the statements and representations in the application, the staff concluded that the absence of washers will not reduce the effectiveness of the package and will not create a situation adversely affecting public health and safety.

Condition No. 5(b) of the certificate was revised to be consistent with 10 CFR 71.4 and to delete "transport index" and "Minimum Transport Index."

Condition No. 8 of the certificate was revised to clarify that the package is approved for use under general license provisions of 10 CFR 71.17. This change is due to a revision in the numbering of the sections in 10 CFR Part 71, that became effective on October 1, 2004 (69 FR 3698).

Sections 7 and 8, the operating procedures and the acceptance tests and maintenance programs, respectively, have also been revised. Section 7 and 8 have been revised to ensure that the annual weight values are compared to the initial receipt weight value. If the annual weight for the package is compared to the previous annual value the 5-pound pickup of water, conceivably there could be an accumulation over the years of more than 5-pounds above the original weight and the package will still be acceptable.

CONCLUSION

These changes do not affect the ability of the package to meet the requirements of 10 CFR Part 71.

Issued with Certificate of Compliance No. 9250, Revision No. 10 on
September 22, 2005, 2005.